

Rec'd PCT/PTO 04 FEB 2005

PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

KIM, KYUNG-MI

1217-5 JANG-GI B/D 4F, BONRI-DONG, DALSEO-GU,  
KISAN INTERNATIONAL PATENT & LAW OFFICE,  
DAE-GU 704-120, Republic of Korea

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) 25 OCTOBER 2004 (25.10.2004)

Applicant's or agent's file reference  
KSPCT-04-01

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/KR2004/000182

International filing date (day/month/year)

30 JANUARY 2004 (30.01.2004)

Priority date(day/month/year)

International Patent Classification (IPC) or both national classification and IPC

IPC7 C08J 9/16

Applicant

PARK, BONG-KUK

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.  
For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR



Korean Intellectual Property Office  
920 Dunsan-dong, Seo-gu, Daejeon 302-701,  
Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

SOHN, Chang Ho

Telephone No. 82-42-481-5538



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/KR2004/000182

**Box No. I Basis of this opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format  
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/KR2004/000182

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	<u>1-10</u>	YES
	Claims	<u>none</u>	NO
Inventive step (IS)	Claims	<u>1-10</u>	YES
	Claims	<u>none</u>	NO
Industrial applicability (IA)	Claims	<u>1-10</u>	YES
	Claims	<u>none</u>	NO

**2. Citations and explanations :**

The following documents identified in the International Search Report have been considered for this report:

D1 : WO 91/14724 A (E.I. Du Pont De Nemours and Company) 2 June 1987

D2 : US 5786398 A (Owens-Corning Fiberglas Tech. Inc.) 28 July 1998

D3 : JP 55-29533 A (Hitachi Ltd.) 1 March 1980

Claims 1-10 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest any of the embodiments as specifically set forth in the claims.

The invention described in independent claims 1 and 6 relates to an expanded polystyrene bead having a functional skin layer and the manufacturing process thereof.

Comparing claims 1 and 6 with D1-D3, the subject matter of these claims differs from the teachings of D1-D3 in that the expanded polystyrene bead is coated with a functional skin layer comprising a poly(vinyl acetate) and functional additives (flame retardants, heat stabilizer, surfactant etc.). According to the present invention, the expanded polystyrene bead forming a core layer exhibits its typical characteristics such as adiabaticity and shock absorbability; poly(vinyl acetate) having a relatively low softening temperature forming a skin layer generates high hermeticity and water-proofness and facilitates the addition of functional additives so as to enhance functionality.

Therefore, the subject matter of independent claims 1 and 6 is considered to be novel and to involve an inventive step; consequently, the subject matter of dependent claims 2-5, 7-10 is also novel and inventive.

Claims 1-10 meet the criteria of PCT Article 33(4), IA, because the invention is industrially applicable.

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference KSPCT-04-01	<b>FOR FURTHER ACTION</b>	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. <b>PCT/KR2004/000182</b>	International filing date ( <i>day/month/year</i> ) <b>30 JANUARY 2004 (30.01.2004)</b>	(Earliest) Priority Date ( <i>day/month/year</i> )
Applicant  <b>PARK, BONG-KUK</b>		

This International search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box No. II)

3. ☐ **Unity of invention is lacking** (See Box No. III)

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 1

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

b. ☐ none of the figure is to be published with the abstract.